SPHAERALCEA CAESPITOSA VAR. *WILLIAMSIAE*, VAR. NOV. (MALVACEAE)

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ABSTRACT

In Railroad Valley of east-central Nevada is a less densely pubescent, thinner-leaved, and somewhat smaller-flowered version of *Sphaeralcea caespitosa* of west-central Utah. This variety is described as new, *S. caespitosa* var. *williamsiae* N.H. Holmgren.

KEY WORDS: Malvaceae, Great Basin flora, *Sphaeralcea caespitosa* var. *williamsiae*

RESUMEN

En el valle Railroad del centro-este de Nevada está una versión de *Sphaeralcea caespitosa* con pubescencia menos densa, hojas finas, y flores algo más pequeñas que la del centro-oeste de Utah. Se describe como una nueva variedad, *S. caespitosa* var. *williamsiae* N.H. Holmgren.

The genus *Sphaeralcea*, consisting of about 40 species, is found in temperate and warm temperate parts of North and South America. It is a difficult genus taxonomically with poorly delimited species. Frequent hybridization and back-crossing may be the culprits. In North America there are about 26 species with the greatest concentration in southwestern United States and northern Mexico. Arizona should be considered as the center of diversity for the North American members with about 16 species, and the concentration decreases nearly exponentially with distance in all directions. The Intermountain Region, an area more than two-and-a-half times larger than Arizona, is home to 12 species with only three extending north of the region: *S. grossulariifolia* (Hook. & Arn.) Rydb., *S. munroana* (Douglas ex Lindl.) Spach ex A. Gray, and *S. coccinea* (Nutt.) Rydb. The latter two species extend to Canada and *S. coccinea* reaches the furthest east for the genus, extending into southern Manitoba, western Minnesota, western Iowa, Kansas, Oklahoma, and western Texas.

Although Kearney's (1935) revision of the North American species is now 67 years old, it has held up relatively well, which is remarkable for such a complex genus. His concepts of the species are still accepted, but perhaps reluctantly by many flora writers, in the absence of a modern assessment of the all the North American species. The only modifications come from the seven new taxa that have since been added, five of which are in the Intermountain Region. Welsh, in his study of the genus for the *Utah Flora* (Welsh et al. 1993), added four of them, *S. psoraloides* S.L. Welsh (1980), *S. janeae* (S.L. Welsh) S.L. Welsh (1980, 1998), *S. moorei* (S.L. Welsh) S.L. Welsh (Welsh 1980; Atwood & Welsh, in

press), and *S. grossulariifolia* var. *fumariensis* S.L. Welsh (Welsh & Atwood 2001); and a fifth from just south of the Utah border in northwestern Arizona, within the Intermountain Region, *S. gierischii* N.D. Atwood & S.L. Welsh (In press). Two other new additions are species from south of the region, *S. polychroma* La Duke (1985) and *S. reflexa* Fryxell, Valdés-Reyna & Villarreal (1991).

In my study of the genus for *Intermountain Flora* I have found the need to expand *S. caespitosa* M. E. Jones to accommodate a disjunct population from Railroad Valley in Nye County, Nevada, which can be distinguished as a separate variety. The species is closely related to *S. ambigua* A. Gray, differing from it most significantly in its shorter stature. The geographical ranges of the two varieties of *S. caespitosa* lie to the north of the northern limits of *S. ambigua* in Utah and eastern Nevada and to the east of its most northern limits in western Nevada and eastern California. A historical scenario for how the two varieties evolved is not implicit from their geographical setting. The two exist in similar desert-valley habitats separated by about 160 km of four major north-south oriented mountain ranges alternating with three relatively broad valleys. Their close similarity may be indicative of recent evolution from an element that migrated northward during a warmer Holocene episode, and their subsequent isolation has been long enough (in this interpretation) for some genetic drift to occur.

The two varieties of *S. caespitosa* can be distinguished from each other and from *S. ambigua* by the characters in the following key.

1. Plants 2.5–8 dm tall; calyx 8–16 mm long; staminal column (3.5–)4–5 mm long; schizocarp of 8–12(–14) mericarps; seeds 1.5–2 mm long; southern half of Nevada and southwestern and northwestern Utah (but absent from the distributions of the *S. caespitosa* varieties), southward through southeastern California and western Arizona to Baja California ____ **S. ambigua**
1. Plants small, 0.3–2.5 dm tall; calyx 10–18 mm long; staminal column 3.5–9 mm long; schizocarp of 11–14 mericarps; seeds 1.9–2.3 mm long; east-central Nevada and central-western Utah ____ **S. caespitosa**
   2. Calyx 13–18 mm long; petals 16–23 mm long; staminal column 3.5–6 mm long; leaves thickish, grayish-green, densely pubescent, usually with stellate hairs overlapping and concealing or nearly concealing the surface; plants 0.3–1.5(–1.7) dm tall; endemic to the western Utah desert in southwestern Millard County and adjacent northwestern Beaver County, at 1600–2000 m elevation ____ var. **caespitosa**
   2. Calyx 10–14 mm long; petals 15–20 mm long; staminal column 6–9 mm long; mature leaves relatively thin, greenish, moderately pubescent with a considerable amount of surface exposed; plants 0.7–2.5 dm tall; endemic to Railroad Valley in northeastern Nye County, Nevada, at 1400–1600 m elevation ____ var. **williamsiae**

Sphaeralcea caespitosa M.E. Jones

Perennial herb, 0.3–1.6(–2.5) dm tall, arising from a woody, branched caudex surmounting a taproot; *herbage* grayish-green with a dense pubescence or pale greenish with a moderately dense pubescence, the hairs stellate, the rays of the hairs spreading in several different directions; *stems* few to several, ascending

or erect, unbranched; *leaves* all cauline, petiolate, the petioles 1–3.5(–7) cm long, the blades of the leaves at midstem larger than the lower, 1.5–4.5(–5) cm long and about as wide, deltate, ovate, or suborbicular, the base cordate, truncate, or broadly cuneate, the margin coarsely crenate or dentate-crenate, and sometimes obscurely 3-lobed, palmately veined, the veins prominent beneath and slightly channeled above; *stipules* filiform or linear; *inflorescence* few-flowered, the lower flowers racemose or solitary in leaf axils, the upper ones often in thyrsoid clusters, the rachis, pedicels, and calyces pubescent as below; *pedicels* 3.5–13 mm long, divaricately ascending, with stipular bracts at the base; *involucral bracts* filiform, pale brownish; *calyx* 10–18 mm long, the lobes lanceolate to ovate, acute, 2/3–3/4 of the calyx length; *petals* 15–23 mm long, the short claw ciliate, the blade obovate, reddish-orange (grenadine); *staminal column* 3.5–9 mm long, stellate pubescent, bearing anthers at the apex; *styles* with capitate stigmas; *schizocarp* of 11–14 mericarps forming a ring 7.5–8.5 mm in diam., each mericarp 2-seeded, 3–5.5 mm high, 2.2–4.6 mm wide, rounded dorsally and rounded to obtuse apically, coarsely reticulate on the sides of the indehiscent lower 1/3 and smooth-sided on the upper 2/3, pubescent on back; *seeds* 1.9–2.3 mm long, reniform, dark brown to black, minutely puberulent in patches.

Sphaeralcea caespitosa M.E. Jones var. **caespitosa** (**Fig. 1A–D**). *Sphaeralcea caespitosa* M.E. Jones, Contr. W. Bot. 12:4. 1908. TYPE: UTAH. BEAVER CO.: "Wa Wa ..., west of Frisco, at Dry Station, ... on very poor volcanic soil covering lava with a shallow coat, and in crevices of the rocks where there is a little soil," 6000 ft, Beaver Co., Utah, 25 Jun 1906, *M.E. Jones s.n.* (HOLOTYPE: POM!; ISOTYPES: NY!, US!)

Perennial herb 0.3–1.7 dm tall; *herbage* grayish-green, densely pubescent, the stellate hairs on mature leaves usually overlapping and concealing the leaf surface; *leaves* with petioles 1–3.3 (–5) cm long, the blades thick, 1.5–4.5 cm long and about as wide, deltate, ovate, or suborbicular, the base truncate to broadly cuneate, the margin coarsely crenate and sometimes obscurely 3-lobed; *calyx* 13–18 mm long; *petals* 16–23 mm long; *staminal column* 3.5–6 mm long; *mericarps* each 4.5–5.5 mm high and 3.2–4.6 mm wide, rounded apically.

Habitat.—Shallow, gravelly alluvial soils, mainly from the Sevy Dolomite Formation (Welsh 1993), and also from calcareous formations, often growing in shadscale, rabbitbrush, or matchweed associations, ranging from (1400) 1600 to 2000 m elevation.

Distribution.—West-central Utah in the valleys and foothills of southwestern Millard County and adjacent Beaver County, in and around the Desert Range Experimental Station (Fig. 2).

Phenology.—Flowering from late May to June, fruiting from mid June to August.

Sphaeralcea caespitosa M.E. Jones var. **williamsiae** N.H. Holmgren, var. nov. (**Fig. 1E–H**). TYPE: U.S.A. NEVADA. NYE CO.: Railroad Valley, just W of Lockes (Black

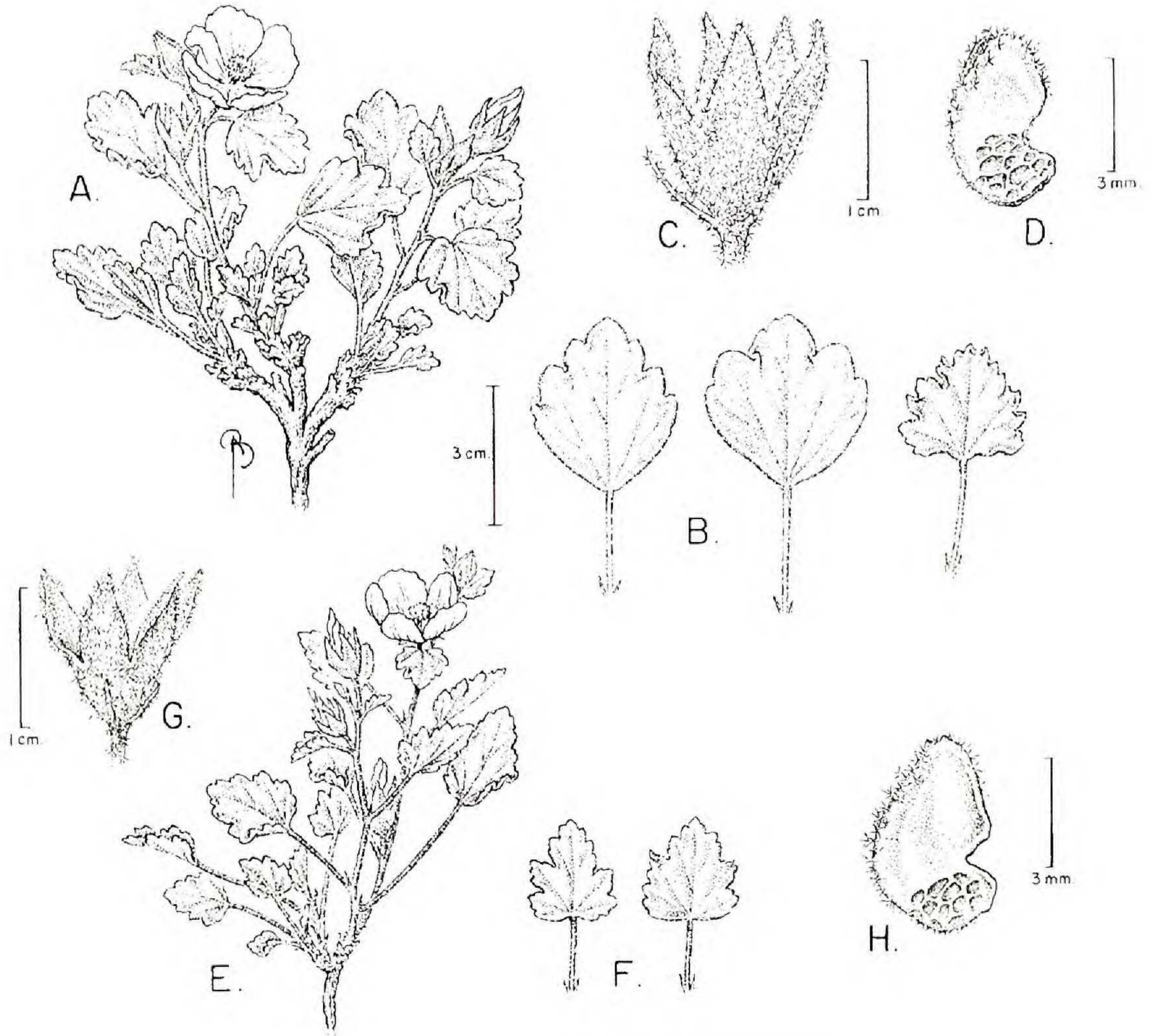


FIG. 1. A–D. *Sphaeralcea caespitosa* M.E. Jones var. *caespitosa*. A. Habit, B. Leaves (showing variation), C. Calyx and bractlets, D. Mericarp. E–H. *S. caespitosa* var. *williamsiae N.H.* Holmgren. E. Habit, F. Leaves, G. Calyx and bractlets, H. Mericarp. Illustrations by Bobbi Angell (all at NY), based on: A, C. *B. Maguire 20861*, B. (left to right) *R.C. Holmgren 265, B. Maguire 20876, S.L. Welsh & M. Chatterley 19530*, D. *R.C. Holmgren 265*, E, G. *S.L. Welsh 20579*, F, H. *K.H. Thorne & B.T. Welsh 957*.

Rock Station), 34.5 air km SW of Currant, 38° 33'13"N, 115° 46'34"W, T8N R55E S15, 4850 ft, 28 May 2001, *N.H. Holmgren & P.K. Holmgren 14322* (HOLOTYPE: NY!; ISOTYPES: BRY!, RENO!, UTC!).

A *Sphaeralcea caespitosa* var. *caespitosa* foliis tenuioribus, modice (non dense) pubescentibus atque calyce breviore, 10–14 mm (non 13–18 mm) longa differt.

Perennial herb 0.7–2.5 dm tall; *herbage* greenish, moderately pubescent; *leaves* with petioles 1.5–3.7(–7) cm long, the blades relatively thin, 1.5–3.5(–5) cm long, 1.5–3(–4) cm wide, deltate or ovate, the base cordate to truncate, the margin coarsely toothed or dentate-crenate and sometimes obscurely 3-lobed; *calyx* 10–14 mm long; *petals* 15–20 mm long; *staminal column* 6–9 mm long; *mericarps* 3–5.5 mm high, 2.2–3.5 mm wide, obtuse apically.

Habitat.—Shallow gravelly soils on alluvium and valley fill, in greasewood and shadscale communities, growing with *Artemisia spinescens*, *Atriplex*

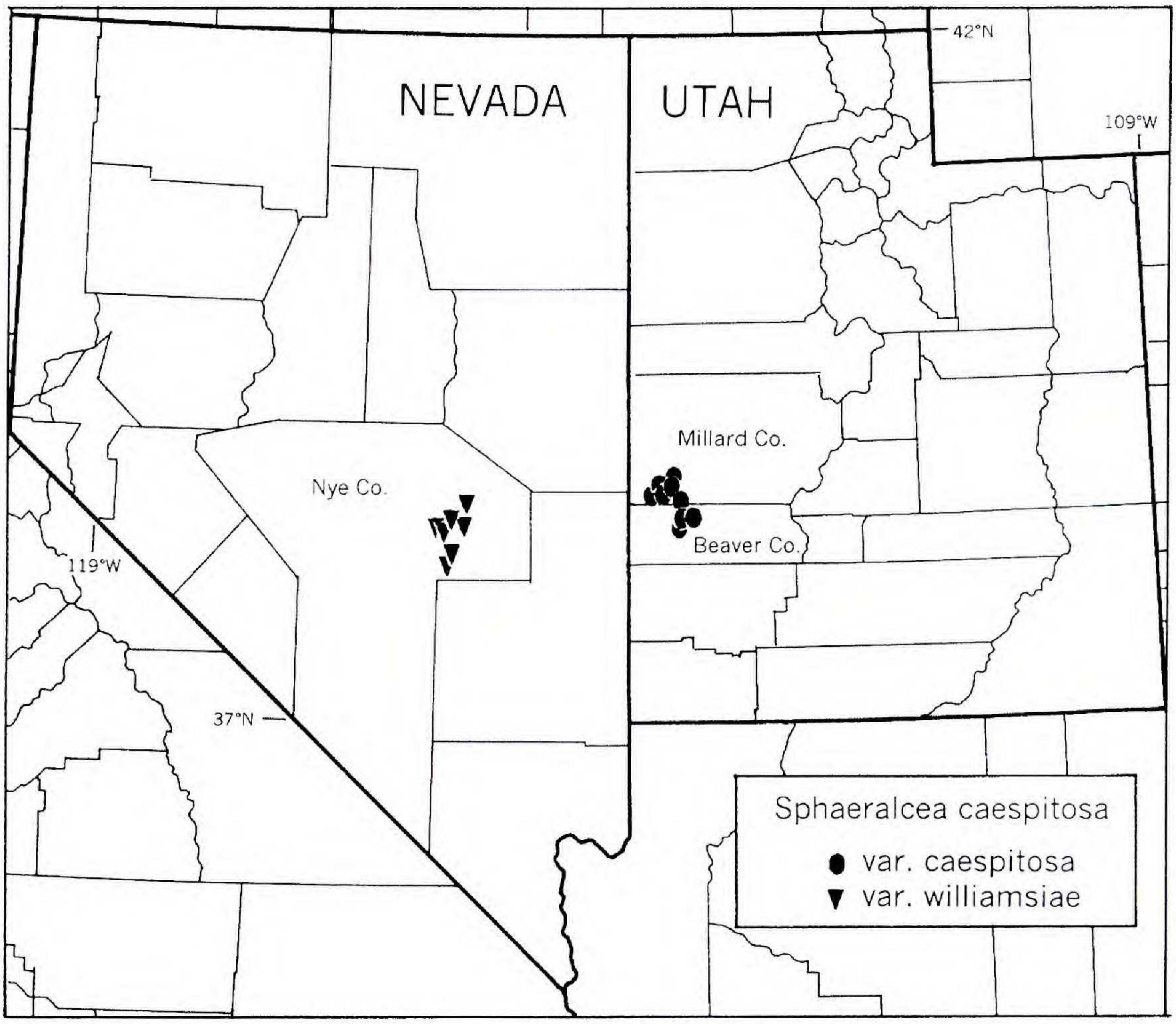


Fig. 2. Map of Nevada and Utah, showing the distributions of *Sphaeralcea caespitosa* var. *caespitosa* and *S. caespitosa* var. *williamsiae*.

confertifolia, *Ephedra viridis*, *Eriogonum shockleyi*, *Hilaria jamesii*, and *Kochia americana*, ranging in elevation from 1400 to 1600 m elevation.

Distribution.—Railroad Valley, northeastern Nye County, Nevada.

Phenology.—Flowering from May to June, fruiting from mid May to July.

Etymology.—It gives me special pleasure to name this lovely desert mallow in honor of Margaret Jensen Williams (1917–2000). *Sphaeralcea* ranked among the top of the many native Nevada genera for which Margaret had great fondness, and it is apparent from her many collections of this taxon that she regarded it as being particularly special. As seen by the tributes to her (Tiehm 2000), Margaret touched many lives.

Her sense of adventure lured her to many parts of the world, but she had a special bond with the Great Basin, especially Nevada. She always lived in Nevada, born in Gardnerville to ranchers, John and Wilhelmina Jensen. She earned her bachelor's degree at the University of Nevada, Reno, in chemistry and a master's degree in mathematics. She married her Chemistry Professor, Loring Williams, and together raised to two children. She was a math instructor at the

University until her appointment was terminated by bureaucratic nepotism rules. From 1959 until retirement in 1981, she taught 4th grade children in a Reno elementary school.

At home, in the early 1950s, she began to concentrate her enormous energy on gardening, at first growing the standard nursery-trade plants. As time passed, she became more and more sophisticated in her choice of garden subjects, especially alpine rock garden plants. It was not long before she was an active member of American, English, and Scottish rock garden societies. Her interests in the Nevada flora were spurred on by the writings in the society journals of Dwight Ripley and Rupert Barneby on their botanical excursions throughout the Great Basin. This deepening interest led her to take classes in plant taxonomy and field botany. At first she was just collecting seeds for exchange with rock garden friends in the U.S. and abroad. Then in the early 1970s, John Thomas Howell of the California Academy of Sciences inspired her to collect plant specimens.

In 1975 she founded the Northern Nevada Native Plant Society, which she presided over for several years, first as President, then as Executive Director. Her charisma, strong will, passion for plants, and contagious enthusiasm drew in a large and active membership, and the Society continues to thrive.

Her legacy lives on through the many research collections filed throughout many herbaria. Her collections filed at the New York Botanical Garden are especially valuable in our research on the *Intermountain Flora* (Cronquist et al. 1972–1997). She was involved in one way or another in collecting 12 specimens that are now types for species or varieties. Where she was not listed as the principal collector, it can be assumed that Margaret was the one who enabled the collection to be made. This attractive new variety joins *Polyctenium williamsiae* Rollins, *Eriogonum ovalifolium* var. *williamsiae* Reveal, and *Astragalus convallarius* var. *margaretae* Barneby as honorific eponyms.

On a personal note, my wife Pat and I will always treasure our many memories of Margaret. She supported our *Intermountain Flora* research in so many ways, from providing food and lodging in her home, transporting us to and from the airport and the RENO herbarium, to being a prompt and delightful correspondent.

PARATYPES: **Nevada. Nye Co.:** all in Railroad Valley: low volcanic hills 1 mi NE of Currant, 23 May 1982, *R.C. Barneby 17821* (NY!); 20 mi SW of Currant, 14 May 1941, *A. Eastwood & J.T. Howell 9426* (US!, UTC!); T8N R55E S21 (NW1/4), 4900 ft, 4 Jun 1991, *L. Grover s.n.* (RENO!); 50.2 km road distance S of Currant on the valley road, T5N R56E S3, 38° 19'18"N, 115° 39'38"W, 1495 m, 7 Jun 2000, *N.H. Holmgren & P.K. Holmgren 13840* (NY!); along U.S. Hwy 6, S side of the highway and at the SW edge of Black Rock Station (Lockes), T8N R55E S15, 38° 33'14"N, 115° 46'34"W, 1480 m, 7 Jun 2000, *N.H. Holmgren & P.K. Holmgren 13845* (BRY!, NY!, RENO!, UTC!); W side of Grant Range, ca. 1 road mi NE of Blue Eagle Spring along road to Currant, T8N R57E S1, 4800 ft, 12 May 1987, *T. Knight 1557* (NY!); 0.75 mi N of Lockes Ranch, 21 May 1945, *B. Maguire & A.H. Holmgren 25128* (NY!, UTC!); U.S. Hwy 6, ca. 20 mi S of Currant, 30 May 1986, *H.C. Stutz 94320* (BRY!); Cherry Creek Road, 1.6 mi to a small knoll N of the

road, T5N R56E S22, 5200 ft, 2 Jun 1980, *K.H. Thorne & B.T. Welsh 942* (BRY!); 1 mi NE of Currant, white knoll on N side of road, T10N R58E S9, 5250 ft, 3 Jun 1980, *K.H. Thorne & B.T. Welsh 957* (BRY!, NY!); ca. 22 mi SW of Currant, T8N R56E S1, 4800 ft, 1 Jul 1980, *B.T. Welsh, K.H. Thorne & S.L. Welsh 413* (BRY!, RENO!); 1 mi NE of Currant, T10N R58E S9 (NW/NW), 5300 ft, *Sarcobatus-Hilaria-Chrysothamnus* community, gravelly substrate, 23 May 1981, *S.L. Welsh 20579* (BRY!, NY!, RENO!); near Hwy 6, SW of Lockes, T8N R55E S21, 5300 ft, 20 Jun 1980, *M.J. Williams 80-164-1* (NY!, RENO!); ca. 1 mi NE of Currant, near Hwy 6, T10N R58E S4, 5300 ft, 29 Jun 1980, *M.J. Williams 80-166-1* (RENO!); 3.4 mi SW of Lockes, NW of Hwy 6, T8N R55E S19, 5300 ft, 9 May 1980, *M.J. Williams, S. Cochrane & A. Tiehm 80-8-3* (RENO!); 3.5 mi SW of Lockes on U.S. Hwy 6, then NW for 1.4 mi, T8N R54E S25, 5350 ft, 9 May 1980, *M.J. Williams, S. Cochrane & A. Tiehm 80-9-3* (RENO!); near U.S. Hwy 6, 0.4 mi NE of Currant, T10N R58E S4, 5150 ft, 26 May 1979, *M.J. Williams & J. S. Holland 79-54-7* (BRY!, RENO!); U.S. Hwy 6, near Mile 119, N of Currant, T10N R58E S4, 5300 ft, 23 May 1981, *M.J. Williams & A. Tiehm 81-18-1* (RENO!); S of Lockes, 1.6 mi S of U.S. Hwy 6, T8N R55E S27, 4770 ft, 23 May 1981, *M.J. Williams & A. Tiehm 81-19-7* (RENO!); ca. 3 mi SW of Lockes, T8N R55E S30, 5300 ft, 28 May 1978, *M.J. Williams & M. Williams 78-75-1* (RENO!, UTC!).

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